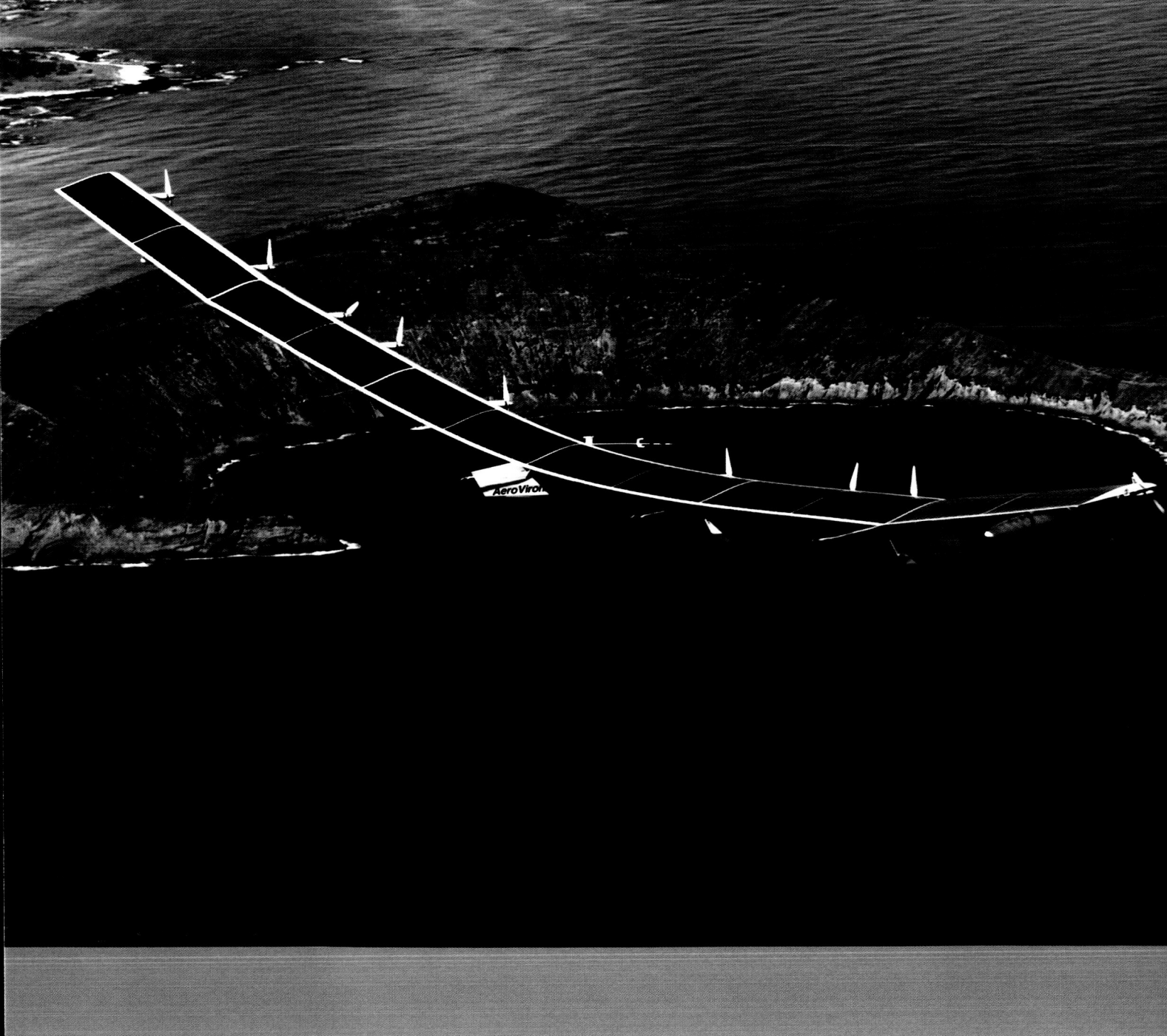
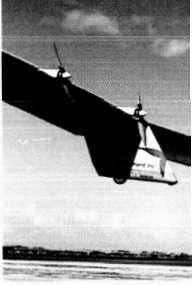


# OLD JOURNEY, NEW HEIGHTS

By John Del Frate





IF YOU COULD SEE THE ROAD AHEAD, YOU MIGHT JUST PASS up a fantastic opportunity because you're blinded by the potential pitfalls. In my case, I was testing the project management waters at the NASA Dryden Flight Research Center after ten years of being a research engineer. I was an eager (but ignorant) rookie project manager (PM) and I was willing to engage in just about any project without knowing what it would entail. The assignment I accepted was to help NASA's Environment Research Aircraft and Sensor Technology (ERAST) Project, a partnership with a fledgling Uninhabited Aerial Vehicle (UAV) industry, to tackle stratospheric flight. I remember one of our industrial partners querying me about whether or not I understood what I was getting into. Like one of those bobble-head toys that have become quite popular, I nodded. But in reality, I didn't have a clue. His response was, "Hang on, it's going to be a wild ride." He was right.

In retrospect, if I had clearly understood the ten years of pitfalls that were coming, I might not have "hung on." Now I can look back and say that I would not trade the experience for anything.

The lows included the destruction of a number of UAVs on my watch. Later someone told me that we should not be surprised if we lost one UAV for every ten flights. We wrote many chapters in the book on what can go wrong with UAVs—and we are still writing. As you can imagine, each mishap was accompanied by an investigation. What an education!

But as bad as the lows were, the highs were stratospheric. We set a number of altitude records with the UAVs, and we performed a number of "first-of-a-kind" demonstrations with payloads. The highlight for me was the world altitude record we set in 2001 with the Helios

aircraft on the Hawaiian Island of Kauai. We conducted our flight operations there, flying to a record altitude of 96,863 feet—10,000 feet higher than any non-rocket propelled aircraft has ever gone. We did it on the power of the sun, and it was an unforgettable experience.

The lowest low followed two years later, when we crashed this magnificent aircraft. So, I shared in both the glory and the humility that surrounded the ERAST project.

For the ERAST effort, we had a small, close-knit team—an alliance—that partnered with different small companies and consultants. I viewed our collaboration as a partnership with these entities, as they were not contractors per se. We were working together under something called a Joint Sponsored Research Agreement (JSRA). It is a form of a NASA Space Act Agreement which is rarely used by NASA but provides a lot of flexibility. In this case, it allowed me to work closely with some very special people. We structured our agreement such that all work done by the various partners was done on a non-profit basis with each of the partners providing some cost-sharing.

I learned some valuable lessons from this remarkably diverse group of talented and committed people who are largely responsible for making the ERAST project—and more specifically, the Helios project—a success. I would like to share a few of the lessons I learned, lessons I will take with me throughout my career.

#### **LEARN FROM THOSE BEFORE YOU**

Jenny Baer-Reidhart, the first ERAST Project Manager, displayed an enormous amount of courage. Some of the things she did to make the program a success required her to be bold and innovative. Because we were doing

# Everything we are doing today is a

things differently, she often took heat and had to fight to stay the course. She always held her ground.

She also had the ability to see the big picture. She created a work environment conducive to getting the job done and secured the funding, the company associations, the places to fly, and the vehicles. Without her, the project never would have enjoyed the successes we did. There were lots of people involved, but Jenny really provided the leadership we needed. I learned an immense amount from her skills and strength as a leader.

## **YOU'VE GOT TO EMPOWER YOUR TEAM**

Ray Morgan was (at that time) the Vice President of AeroVironment, the company that was our partner on Helios. He had been an ardent micromanager. A couple of years before ERAST came around, he realized that his management style was killing both him and his division. In order to survive, he decided to change himself and his division by managing a 180-degree turnaround. By the time this recovering micromanager and his team joined the ERAST alliance, Ray had empowered his team in such a way that they confidently used the strength of the entire team to make key decisions.

After his transformation, Ray would participate in the decision-making process, but he no longer steamrolled the team by saying, "No, it has got to be done my way." He was always willing to let anyone on the team have their say and to let the team processes dictate how a decision would be made. It was really inspiring to see the benefits of this type of management. Everyone had the resources, the responsibility, and the authority to do what they needed to do. As a result, we progressed very quickly and very efficiently.

## **TRUST IS HUGE**

I learned a lot from my relationship with AeroVironment, specifically from two people, Bob Curtin and Kirk Flittie. I wish everyone could have the opportunity to work with contractors that they trust the way I trusted these guys. Usually, with the government contracting structure, we spend an inordinate amount of time and money simply because we don't trust the contractor. There is probably a reason for every process or regulation used to govern them, but they seem ridiculous

and wasteful to me. I started out treating the industrial partners like "contractors," but they soon earned my trust and respect. And it paid off for both the government and the industry partners, as we were able to do more technology development at a set level of funding.

Not having to constantly monitor the contractors meant a much leaner operation; we were able to work smarter and faster. But we didn't throw the necessary checks and balances out the window. Instead, we used them at a level that allowed us to pour far more concentration into getting the job done. And because of the trust we'd established, I knew that our partners always had the best interest of the project in mind. I didn't have to always look over their shoulders to make sure the job was done right...ultimately we had the same goal.

## **DON'T TAKE "NO" FOR AN ANSWER**

One of our independent consultants to ERAST was Dale Tietz, a very tenacious fellow. He is the type of guy that just does not take "no" for an answer. If the front door is closed, he asserts, "Try the back door." And if the back door doesn't work, "Try the windows." That's how he is.

He's also the kind of guy who has a very thick Rolodex. He can walk into a meeting, and before long he is friends with everybody and scheming ways of taking advantage of the strengths of those in the room. Having a guy like that on your team adds a very special dynamic. He is constantly evaluating people and situations, and is willing to do whatever it takes to get things done. Watching him, I learned that project managers need to be tenacious—even when you are doing the right thing, doors will close—so you must never give up.

## **STATE "THE MESSAGE" QUICKLY AND CONCISELY**

Somewhere along the way it occurred to us that we needed help making the right kind of project information available to the public. Now, I've never heard of another NASA Project bringing in a "publicist" to help, but that is exactly what we did. Pete Jacobs became our publicist. He would pop in and out, but when he popped in, it was because we were on the brink of some tremendous flight accomplishment. He taught us the importance of "the message." He taught us to use words that could be

# small step along that larger journey.

remembered by children, the media, decision makers, or the average Joe on the street. He wanted us to get that message out but also to get it right. He pointed out what should have been obvious: Stakeholders or the media don't have the time or capacity to absorb a longwinded technical speech. Fifteen seconds to say what you mean and say it right may be all you're going to get—especially if you're on-camera.

I think that engineers, like myself, tend to really over-complicate things. We see the nuances in everything. People are always telling us to keep it short and make it consistent. Pete had us working on getting it down to short, concise statements that packed a lot of punch. He wanted everyone on the team to be able to give the same message. We were skeptical that there was any value to this exercise, but Pete was good and achieved unprecedented results. So as an engineer, whether I liked it or not, I learned that it's vital to say it right—and to say it concisely.

## KEEP THE IMPORTANT THINGS IN PERSPECTIVE

This was the most personal lesson learned, but also the most important. By the time we were in the 2001 deployment with Helios, my wife came to me and said, "I think your work is more important to you than our family." I thought, "No way," and I argued with her quite a bit. I knew I had a pretty strong work ethic, but I thought that my family rated a much higher priority.

I was convinced I was right, so as far as I was concerned it was a dead issue. But a couple of weeks had gone by when I made a decision that clearly favored work over family, and my wife was quick to call me on it. The bottom line was that even though I said that my family was the most important, whenever there was a conflict between my work and my family—work always won. If there was a scheduling issue, work always won out over my family. But I had become blind to this. I thank God that I started to see the light sooner rather than later, as it was hurting my marriage and my family.

Of course realizing you have a problem doesn't fix the problem, but it's a start. I knew that I had to really make an effort to show what my "top" priorities are. It's an ongoing struggle for me, especially when I, like most PMs, don't have the ability to turn work off when I leave

the office. It's easy to let things get out of perspective. I always understood that some things are more important than work. But I learned that I need others—especially my wife—to help me judge how well I am doing.

Part of keeping things in perspective is the ability to see an individual project as a step in a larger, ongoing journey. More than a hundred years ago, the Wright Brothers took a huge step: They convinced the world that we could actually achieve "heavier-than-air" flight. Their work built a foundation, one that those of us working in aerospace have been able to add to and build on.

Our journey consists of taking steps based on prior steps, learning lessons based on the accumulated lessons of those who have gone before us. Everything we are doing today is a small step along that larger journey. These are the small lessons that have helped me shape and characterize my part in the long journey. They are the small road signs that I have posted for those who follow me. •

## LESSON

- Make it a regular habit to reflect on your experiences, to develop "small" lessons, and to share them with your peers.

## QUESTION

*Is embracing a philosophy of "ignorance is bliss"—that is, believing you are better off not knowing the detrimental factors beyond your control—the right attitude for only rare situations, or should it be applied systematically?*



JOHN DEL FRATE has ten years of project management experience with the development and flight testing of Uninhabited Aerial Vehicles (UAVs).

This work was done under the Environmental Research Aircraft and Sensor Technology (ERAST) Project. Currently, he is Project Manager for the High Altitude Long Endurance Remotely Operated Aircraft (HALE ROA), a NASA Vehicle Systems Program Sub-Project which will continue the development of UAVs for use in the stratosphere.